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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,378	05/20/2004	Koichi Miyachi	1035-510	6503

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EXAMINER	
CHIEN, LUCY P	
ART UNIT	**PAPER NUMBER**
2871	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/849,378	MIYACHI, KOICHI	
	Examiner	Art Unit	
	Lucy P. Chien	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 15-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

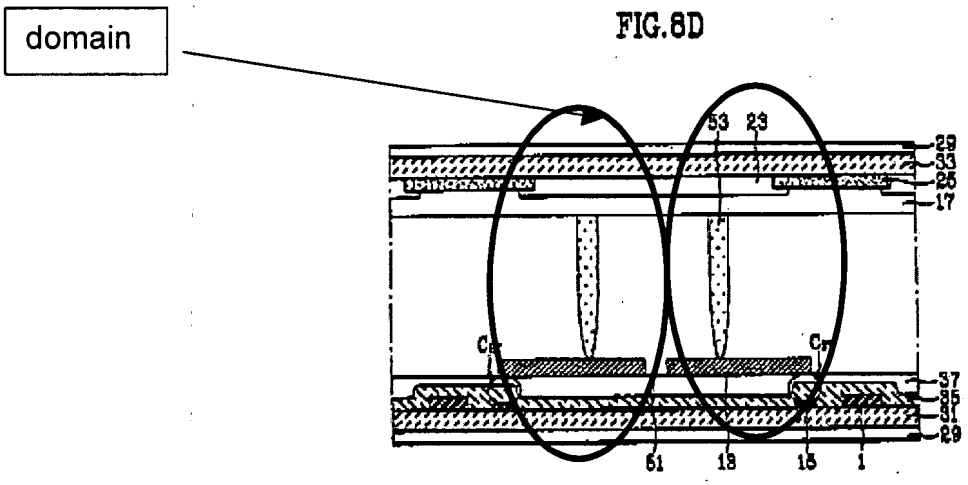
Claim 1-7,9-13,15-30,32-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 6774967) in view of Kim et al (US 6356335).

Regarding Claim 1,24,20

Kim et al (US 6774967) discloses (Figure 8D) a pair of substrate (31,33) respectively having electrodes (17,13) on opposing surfaces, the pair of substrates sandwiching a liquid crystal layer (the space between 17 and 13). A plurality of domains (shown below) formed within a display region when a voltage is applied to the electrodes, the plurality of domains being such that liquid crystal molecules are aligned in different directions from domain to domain, at least one of the electrodes on the pair of substrates having an aperture section (shown below). The liquid crystal layer having a plurality protrusion section (53) which connects the electrodes (17,13) Kim et al discloses (Figure 14) a aperture (51) and protrusion section (53) extending across the liquid crystal layer and which connects the electrodes, and wherein the aperture section is bend in such a manner that sides of the aperture and protrusion section extend in directions which respectively form about 45° with a long side and a short side of the

display region. And the bent parts of the protrusion section are located in regions corresponding to olid portions of the electrode.

Kim et al does not disclose the protrusion sections are discontinuous.



Kim et al discloses (US 6356335). (Fig. 8e) the protrusion (57) are discontinous (shown protrusions being separated) which are used to be provided to obtain multi-domain effect.

It would have been obvious to one of ordinary skilled in the art to modify Kim et al to include Kim et al's protrusion being discontinous motivated by the desire to obtain multi-domain effect which widens the viewing angle to achieve a high brightness by stable arrangements of the liquid crystal molecules. (column 2, rows 1-5).

Regarding Claim 2,25,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (Figure 8D) at least one of the electrodes (13) has a protrusion (53) as the protrusion section within the display region;

and a height of the protrusion is identical to a thickness of the liquid crystal layer (shown above).

Regarding Claim 3,26

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (Figure 8D) the protrusion (53) is provided to only one of the electrodes on the pair of substrates.

Regarding Claim 4,27,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (Figure 8D) the protrusion is provided to the electrode (17) which opposes the electrode (13) having the aperture section (51).

Regarding Claim 5,28,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (Figure 7A which is the section view of Figure 8D) there are domain boundaries at the protrusion section and at the aperture section, the domain boundaries being boundaries between the domains in which the liquid crystal molecules are aligned in different direction from domain to domain.

Regarding Claim 6,29,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (Figure 7A which is the section view of Figure 8D) the protrusion section is provided outside a region where, in a two-dimensional view, the aperture section is provided.

Regarding Claim 7,30

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses the protrusion section (53) is made of dielectric material. (Column6, rows 25-28).

Regarding Claim 9,21,32,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses the liquid crystal layer has negative dielectric anisotropy. (Column 8, rows 23-28). The liquid crystal molecules are initially aligned vertically with respect to the electrodes. (Column 3, Rows 8-16)

Regarding Claim 10,33

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses a surface of the protrusion section is subjected to an alignment process which is different from an alignment process of regions other than the surface of the protrusion section.

The applicant is claiming, "a surface of the protrusion section is subjected to an alignment process which is different from an alignment process of regions other than the surface of the protrusion section." There is no affect on the structure therefore the alignment process doesn't affect the patentability of the device itself.

Regarding Claim 11,34,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses a surface of the protrusion section is subjected to a horizontal alignment process so that the liquid crystal molecules are

initially aligned in parallel with the surface of the protrusion section. (Column 10, rows 60-67, Column 11 1-5).

Regarding Claim 12,35,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses an alignment film is provided to the display region of the pair of substrates, whereas no alignment film is provided to a surface of the protrusion section. (Column 10, Rows 39-46)

Regarding Claim 13,36,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (figure 8D) the protrusion section is tilted with respect to a thickness direction of the air of substrates.

Regarding Claim 15,37,

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (Figure 7A which is the section view of Figure 8D) the protrusion section (53) is provided in parallel with the aperture section.

Regarding Claim 16-18,38,39

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (figure 14) the protrusion and aperture section is substantially V-shaped.

Regarding Claim 19,40

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (figure 14) wherein the aperture secion includes one or more apertures defined in a pixel electrode.

Regarding Claim 22

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses (figure 14) wherein the protrusion section is substantially parallel to the aperture section.

Regarding Claim 23

In addition to Kim et al (US 6774967) and Kim et al (US 6356335).as disclosed above, Kim et al (US 6774967) further discloses wherein the protrusion section extends across the liquid crystal layer (Fig. 8d) and is made of a different material than is the liquid crystal.

Claim 8,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 6774967and of Kim et al (US 6356335).in view of Takeda et al (US 6724452).

Regarding Claim 8,31,

Kim et al (US 6774967) and Kim et al (US 6356335) disclose everything as disclosed above.

Kim et al (US 6774967) and Kim et al (US 6356335) do not disclose the protrusion section is made of a light-shielding material.

Takeda et al disclose (Column 26, Rows 32-38) the protrusion made of light-shielding material to prevent passage of visible light whereby contrast improves.

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kim et al and Kim et al's display to include Takeda et al's protrusion made of light-shielding material motivated by the desire to prevent passage of visible light whereby contrast improves.

Response to Arguments

Applicant's arguments filed 5/3/2007 have been fully considered but they are not persuasive.

Applicant's arguments that "..."Fig. 8e of Kim 2 are discontinuous is due to the presence of a slit 43 there between which prevents them from being connected." The bent parts of the protrusion section are discontinuous which provide a plurality of domains as shown below.

FIG.14

KIM 6774967

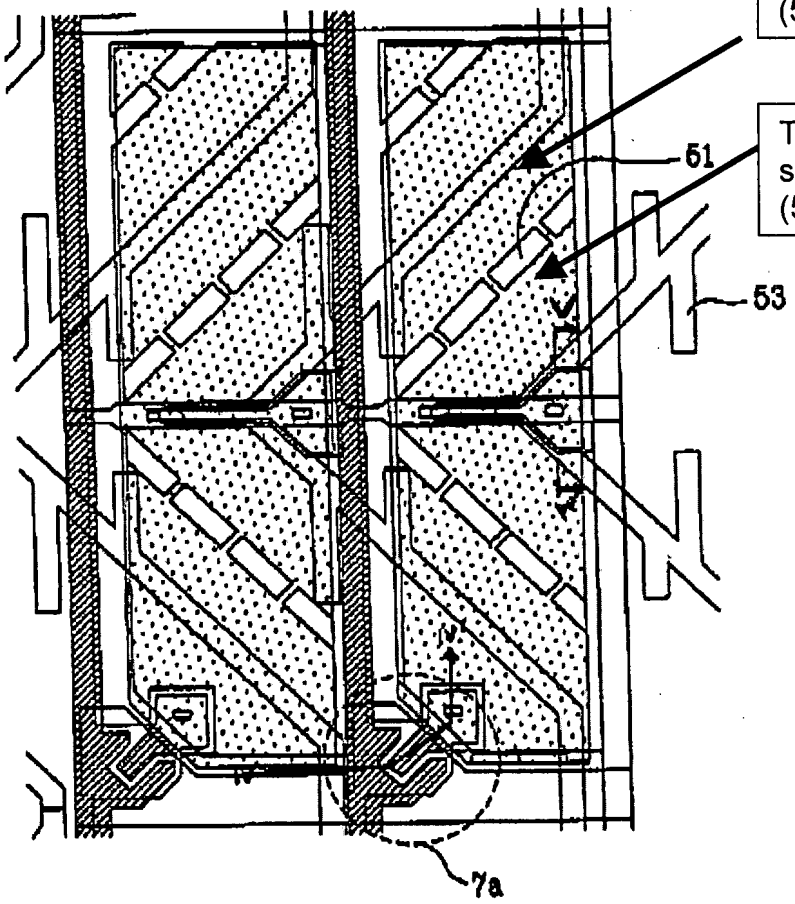
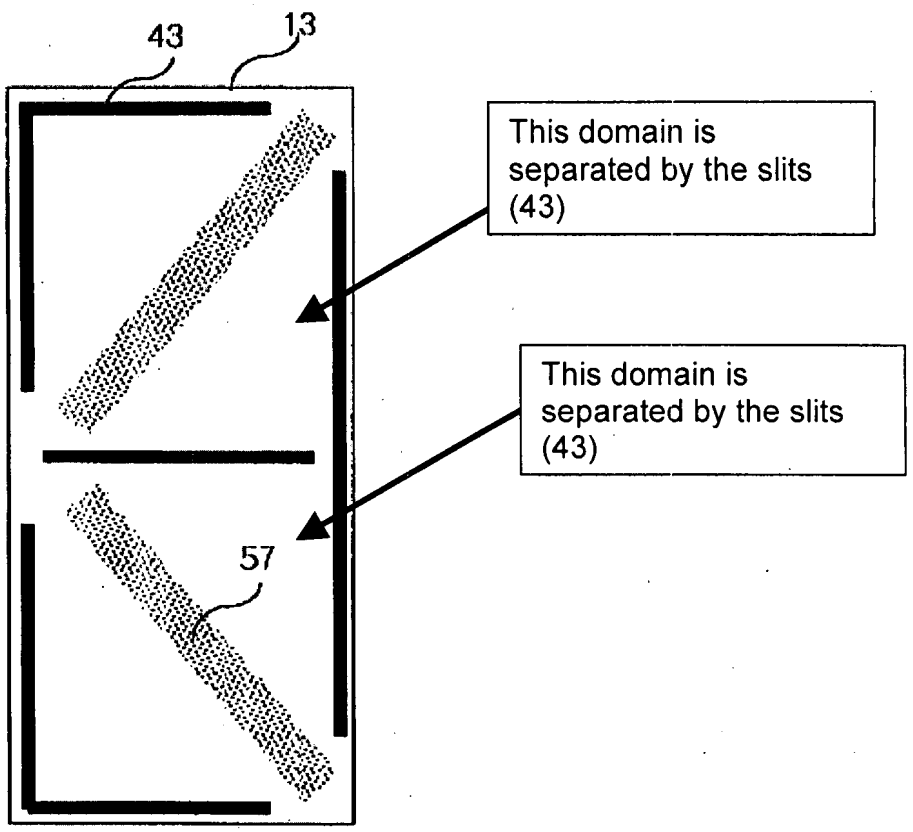


FIG. 8E



Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien
Examiner
Art Unit 2871

ANDREW SCHECHTER
PRIMARY EXAMINER